REMARKS

This application has been carefully reviewed in light of the Office Action dated November 13, 2006. Claims 13 and 14 have been cancelled herein, without prejudice or disclaimer of subject matter. Claims 1, 3, 4, 8, 10, 11, 16, 17, and 20 to 22 remain in the application, of which claims 1, 3, 4, 8, 10, 11, 16, 17, 20 and 22 have been amended. Claims 1, 11, and 17 are the independent claims. Reconsideration and further examination are respectfully requested.

Initially, the Applicants' undersigned representative thanks Examiner Daye and Primary Examiner Al-Hashemi for the thoughtful courtesies and kind treatment afforded during the personal interview conducted on January 10, 2007. In the interview, the Applicants' representative summarized several features described by the application, including the feature of storing a sequence of nodes, including a given node *and a predecessor node*, for the successor node. At the conclusion of the interview, the Examiner stated that she was unwilling to concede that the applied art did not describe this feature without reviewing the reference in further detail. All parties, however, agreed that the interview generally advanced prosecution of the application, and further aided the mutual understanding of the disclosure.

In the Office Action, claims 1, 11 and 17 were rejected under 35 U.S.C. § 112, ¶ 1, for using the term "intermediary node." In response, and without conceding the correctness of the rejection, the term "intermediary node" has been replace with the term "given node," as described throughout the disclosure including at least page 6 of the specification ("... a given node has one predecessor and one or more successors." (emphasis added)). Reconsideration and withdrawal of the § 112, ¶ 1 rejection are respectfully requested.

Claims 8, 13 and 22 were rejected under 35 U.S.C. § 112, ¶ 2, for various alleged informalities. As indicated above, claim 13 has been cancelled herein, without prejudice or disclaimer of subject matter, and without conceding the correctness of the rejection. Furthermore, claim 8 has been amended to correct the alleged antecedence problem, and claim 22 has been amended to further comport the features of that claim with independent claim 17. Reconsideration and withdrawal of the § 112, ¶ 2 rejections are therefore respectfully requested.

Claims 1, 8, 11, 13, 16, 17, 21 and 22 were rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,931,418 ("Barnes"); claim 3 was rejected under 35 U.S.C. § 103(a) over Barnes in view of U.S. Patent No. 5,454,102 ("Tang"); and claims 4, 10, 14 and 20 were rejected under 35 U.S.C. § 103(a) over Barnes in view of Tang and further in view of U.S. Patent No. 6,029,162 ("Schultz"). As indicated above, claims 13 and 14 have been cancelled herein, without prejudice or disclaimer of subject matter, and without conceding the correctness of the rejection. In response, claims 1, 11 and 17 have been amended to include the feature that, for the successor node, a data table is stored including first and second object strings, the first object string listing the predecessor node and the first given node, and the second object string listing the predecessor node and the second given node. Support for these further clarified features is described throughout the disclosure, including at least pages 8 to 10 and 13 of the specification, and FIG. 1. Reconsideration and withdrawal of the § 102 and § 103 rejections are respectfully requested.

According to the present disclosure, data objects are stored as nodes in a hierarchically-structured, multi-dimensional directed graph, the directed graph including a predecessor node, a first and a second given nodes, and a successor node, the successor node connected to the predecessor node via a first sequence of nodes including the successor node, the first given node, and the predecessor node and a second sequence of nodes including the successor node, the second given node, and the predecessor node. For the successor node, a data table is stored including first and second object strings, the first object string listing the predecessor node and the first given node, and the second object string listing the predecessor node and the second given node. A query involving the successor node is received, the query is compared to the first and second object strings, and the query is resolved based upon comparing the query to the first and second object strings.

Referring to particular claim language, claim 1 recites a method including storing data objects as nodes in a hierarchically-structured, multi-dimensional directed graph, the directed graph including a predecessor node, a first and a second given nodes, and a successor node, the successor node connected to the predecessor node via a first sequence of nodes including the successor node, the first given node, and the predecessor node and a second sequence of nodes including the successor node, the second given node, and the predecessor node. The method further includes storing, for the successor node, a data table including first and second object

strings, the first object string listing the predecessor node and the first given node, and the second object string listing the predecessor node and the second given node. The method also includes receiving a query involving the successor node, the query is compared to the first and second object strings, and resolving the query based upon comparing the query to the first and second object strings.

Independent claims 11 and 17 recite an apparatus and a system which substantially correspond to the method recited by claim 1.

The applied art is not seen to disclose, teach or to suggest the foregoing features recited by the by the independent claims. In particular, Barnes is not seen to disclose at least the feature that a data table is stored for the successor node, the data table including first and second object strings, the first object string listing the predecessor node and the first given node, and the second object string listing the predecessor node and the second given node.

Barnes describes preparing multi-dimensional data into nodes and arranging the nodes logically in the form of a partial-order database, which may then be traversed by a data mining tool. *See* Barnes, Abstract. While it is true that each node has relational linkage with every other node stored in the database, it is also true that each node merely includes "a list of all immediate predecessors (IPs) and a list of all immediate successors (ISs)." *See* Barnes, col. 9, ll 4 to 5 and 32 to 34; and FIG. 6. For example, the "only links stored" for top node 41 "are those to its immediate successors (children), which in this example are a node 402, a node 403, a node 404, and a node 405." *See* Barnes, col. 9, ll. 5. Notably, each of these "immediate" successors are those with "no path upward to node 401 longer than one link." *See* Barnes, col. 9, ll. 8 to 10. Such a limitation is consistent with the requirement of Barnes' to building the multi-dimensional database node-by-node prior to conducting a search. *See* Barnes, col. 11, ll. 35 to 40; and FIG. 8 ("Seeding the database with small patterns is necessary to create a topology that may be searched efficiently."(emphasis added)).

Unlike the nodes of Barnes, which are understood to store a list of all *immediate* predecessors and/or successors, each of the independent claims recites that, for a successor node, a data table is stored including object strings which list the predecessor node *as well as* the first or second given node. Thus, the independent claims logically recite storing paths upward which are *more than* one link, while Barnes is merely seen to describe storing paths upward of *exactly*

one link. Specifically, since the successor node is connected to the predecessor *via the first or second given nodes*, the successor node thus stores a path upward of *two links*. Accordingly, since the independent claims recite that links *other than* immediate predecessors or successors are stored in the data table, Barnes is not seen to disclose at least the features that, for the successor node, a data table including first and second object strings is stored, the first object string listing the predecessor node *and* the first given node, and the second object string listing the predecessor node *and* the second given node.

Although Examiner Daye and Primary Examiner Al-Hashemi were recalcitrant to admit that Barnes failed to teach this feature in the interview, they each promised to alert the Applicants' undersigned representative if they later located *any* portion of the Barnes reference which even arguably described storing in a node anything other than a list of the immediate successors or the immediate predecessors. After further review and scrutiny of the references, the Applicants continue to assert that no such disclosure or suggestion exists, and further note that the Examiner has not alerted the Applicants the existence of such an alleged teaching.

Accordingly, based on the foregoing amendments and remarks, independent claims 1, 11 and 17 are believed to be allowable over the applied reference. The other rejected claims in the application are each dependent from the independent claims and are believed to be allowable over the applied reference for at least the same reasons. Because each dependent claim is deemed to define additional aspects of the disclosure, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

No fees are believed to be due at this time. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: February 12, 2007

David E. A. Jordan
Reg. No. 50,325

Fish & Richardson P.C.
1425 K Street, N.W.
11th Floor
Washington, DC 20005-3500
Telephone: (202) 783-5070
Facsimile: (202) 783-2331

40384742.doc